HP Storage Summit 2012

Design your future

Converged storage without boundaries

12 - 13 July 2012

HP Storage Summit 2012

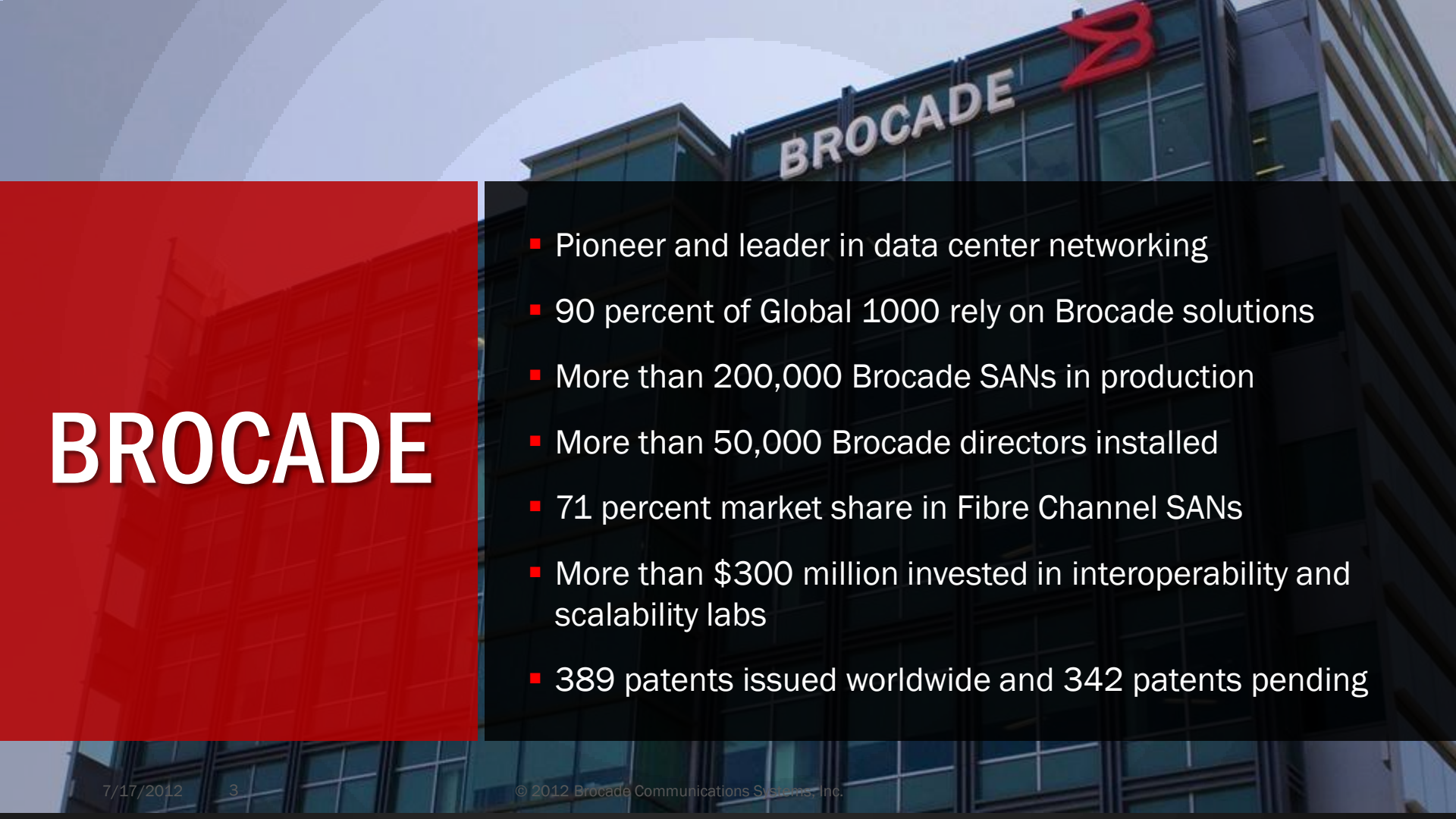
Design your future

Converged storage without boundaries

HP & BROCADE: LEADING THE TRANSITION TO THE CLOUD

AJ Casamento

Senior Solutioneer, Principal,
Brocade



BROCADE

- Pioneer and leader in data center networking
- 90 percent of Global 1000 rely on Brocade solutions
- More than 200,000 Brocade SANs in production
- More than 50,000 Brocade directors installed
- 71 percent market share in Fibre Channel SANs
- More than $300 million invested in interoperability and scalability labs
- 389 patents issued worldwide and 342 patents pending

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Brocade's Data Center Focus

- Fabrics to drive simplicity, reliability, flexibility and cost savings
  - Continued leadership in Fibre Channel SANs
  - Innovation in Ethernet Fabrics for private/public clouds
- Early adoption of Software-defined Networking
- Innovation in acquisition models: Brocade Network Subscription

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FY11 Partnership Highlights

- >10M FC switch ports shipped!
- 1st OEM to GA & sell 16 Gbps Directors
- FY11: Record number of Directors sold
- 78% Yr./Yr. growth in adapters
- HP ES leveraged DC tech refresh
- Cisco retirement: 45 accounts

* Milestone date: November 2011

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HP B-Series Solutions

SEAMLESS SAN MANAGEMENT WITHIN HP FRAMEWORKS

- HP CloudSystem Matrix
  - HP SPM / Matrix Automated Storage Provisioning integration with HP SAN Network Advisor for efficient B-Series SAN management
- HP Storage Essentials fully integrated management of the HP B-Series SAN
- HP VirtualSystem V3 with 3PAR
  - HP B-series FC SAN
- HP ProLiant BladeSystem server
  - HP Virtual Connect 24-port FC blade module
  - HP 8Gb FC Mezzanine adapter
  - HP 8Gb 24-port FC blade switch
- HP B-series Encryption + HP Secure Key Manager solutions

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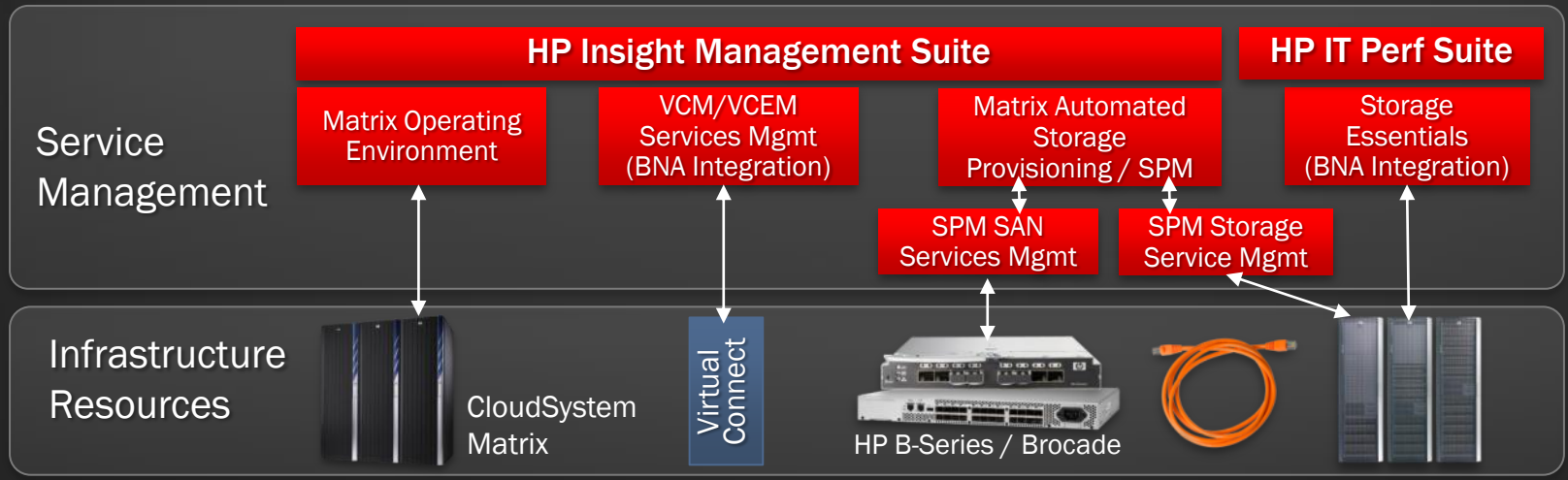
HP Storage Provisioning Manager (SPM)

STORAGE AND SAN SERVICES MANAGEMENT FOR CLOUDSYSTEM MATRIX

- HP Matrix' automated HP Storage Provisioning Manager (SPM) performs automated provisioning and configuration of HP storage within HP CloudSystem Matrix environments by replacing manual tasks with policy-based automated services that act on behalf of the storage administrator
- SAN Services Management of SPM provided connectivity services (SAN naming and device connectivity) and connection services (SAN Zoning) through integration with HP SAN Network Advisor via SMI-S



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HP 3PAR Virtual Domains with HP B-Series Virtual Fabrics

SIMPLE AND SECURE

3PAR Virtual Domains

- Master administrator creates/assigns users, logical elements, and domains
- Users authorized to manage elements in their Domain(s) only with Domain-specific statistics
- Integrated with System Reporter, LDAP, and Remote Copy

Improved QoS

- Completely virtual implementation preserves massively parallel InServ load balancing
- Higher performance and availability levels than pre-consolidation levels

"Virtual Private Arrays" ideal for:

- "Self-service" storage
- Different applications and user groups
- Error prevention
- Compliance

Brocade Virtual Fabrics

- Virtual Fabric (VF) is feature that allows HP B-Series Directors/switches to be partitioned into logical switches
- Virtual Fabrics supported on SN8000B, DCX, DC04, 8/80, and 8/40
- Backwards compatible with existing Brocade/McData infrastructure

Benefits

- Independent management
- RBAC to allow users to manage separate logical switches
- Separate domain, Name Server and zoning data base
- Traffic and management isolation
- Useful for storage services and/or department charge-back
- Simple configuration through SAN Network Advisor

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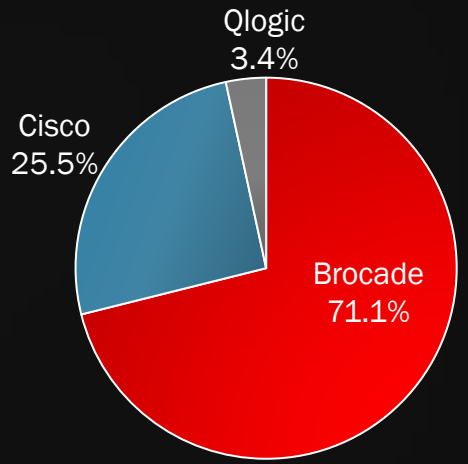
SAN Industry Momentum

BROCADE AND HP LEADING THE INDUSTRY

- June 2011, 16 Gbps switch portfolio launched by Brocade and its OEM partners
- CQ4'2011 and CQ1'2012 record TAM for Fibre Channel SAN market (Dell'Oro)
  - Broad based strength
  - Directors, fixed switches, embedded switches
- Brocade share leadership and growing



SAN Share (Fixed + Modular) —Total

Source: Dell'Oro Group, "SAN Worldwide Tables, 1Q12," May 2012

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Gartner's IT Market Clock for Storage Technologies— Fibre Channel

- Fibre Channel just reaching prime of lifecycle today
- Server virtualization has stimulated SAN deployment
- Data growth is exponential, driving need for more storage

Source: Gartner, Inc., IT Market Clock for Storage, 2011, Valdis Filks, September 6, 2011.

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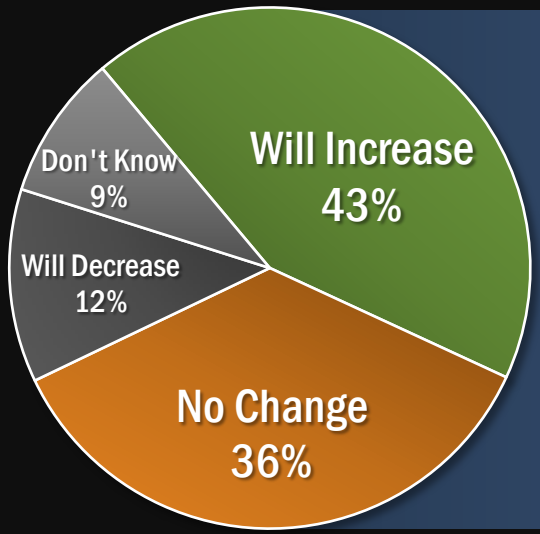
Fibre Channel Purchase Plans Strong and Growing

RESULTS OF THE BROCADE ANNUAL CUSTOMER SURVEY

Survey question: *How do you expect your company's Fibre Channel purchases to change in the next 3 years?*



~80% of Brocade customers expect to maintain or increase Fibre Channel spending over the next three years

Source: Brocade Annual Customer Survey, July 2011

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Cloud-Optimized SAN Platforms

FIBRE CHANNEL IS THE FOUNDATION FOR PRIVATE AND PUBLIC CLOUD STORAGE

8-slot and 4-slot
HP SN8000B Backbone

48-port 1U
HP SN6000B FC Switch

24-port 1U
HP SN3000B FC Switch

Single and dual-port
HP B-series Adapters

- Rely on a network that delivers unequaled uptime
  - Data center-proven reliability and availability, innovative business continuity and encryption services
- Build a network that adapts to your business
  - Enable unprecedented virtualization and consolidation of IT resources
- Manage your network simply and efficiently
  - Simplify deployment and management of server, switch and adapter resources

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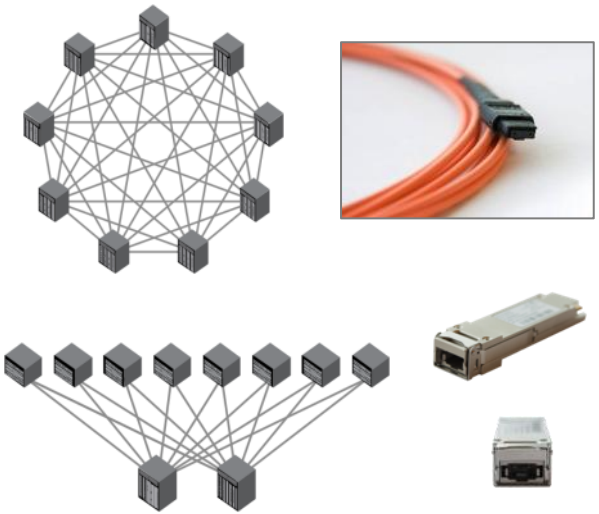
Scale-Out Fabrics for Cloud Applications

INTER-CHASSIS LINKS (ICLs) REDUCE COMPLEXITY AND COST

- Simpler, flatter, low-latency chassis topologies
- 64 Gbps Fibre Channel uplinks via 16 Gbps Quad-SFP
- Maximizes performance and scalability
- Fewer cables, more usable ports
- Optimal load balancing
- Improved availability



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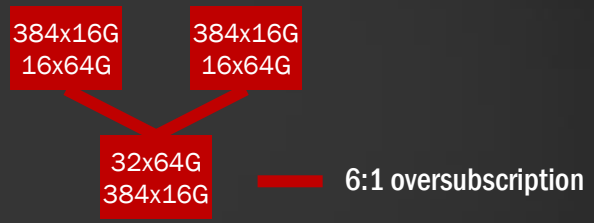
Consolidate Today ➡ Lower Operating Costs

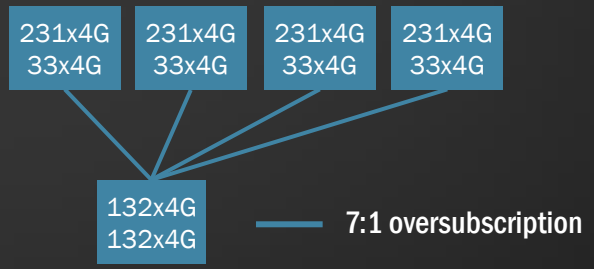
HP B-SERIES ICL ADVANTAGE EXAMPLE—1000 DEVICE PORTS

	HP SN8000B	Cisco MDS 9513	Customer Benefit
Total Chassis Required	3	5	2 less chassis
Total Device Ports	1152 (16Gbps)	1056 (4 Gbps)	96 more available device ports, 4X the bandwidth
Ports "wasted" for ISLs	0	264	Efficient design, every single port used for device connection
Total inter-switch Cables	32	132	75% less cables
Energy Efficiency (kWh/yr)	~55K	~101K	Uses 46% less power per fabric
Rack Units	42RU	70 RU	2 rack vs 3 racks for Cisco

HP SN8000B



Cisco MDS 9513



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Real World Consolidation Examples

HP SN8000B Deliver Savings Today

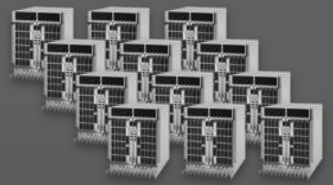
Cisco SAN

- 20 chassis
- 292 rack units
- 4.2 Tbps of bandwidth
- 33.4K watts

Massive Savings

- 8 fewer chassis
- 40% reduction in rack units
- 3.8x more bandwidth
- 68% fewer watts

HP B-series SAN



- 12 chassis
- 174 rack units
- 16.1 Tbps of bandwidth
- 10.8K watts

Simpler, more scalable, and better performance and reliability

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Leading the Transition to Next-Gen Data Centers

PLATFORM TRANSITION WELL UNDERWAY AND AHEAD OF PLAN

- End users accelerating transition to new platform technology
  - Consolidating infrastructure is saving operating costs
  - Hundreds, thousands of cable/connection problems found earlier in the process, avoiding application problems later
- HP SN8000B ICL attach **~10X** higher than previous platform
- May 2012, Brocade reports 23% of all of its Q2 2012 SAN revenue is from new SAN offering

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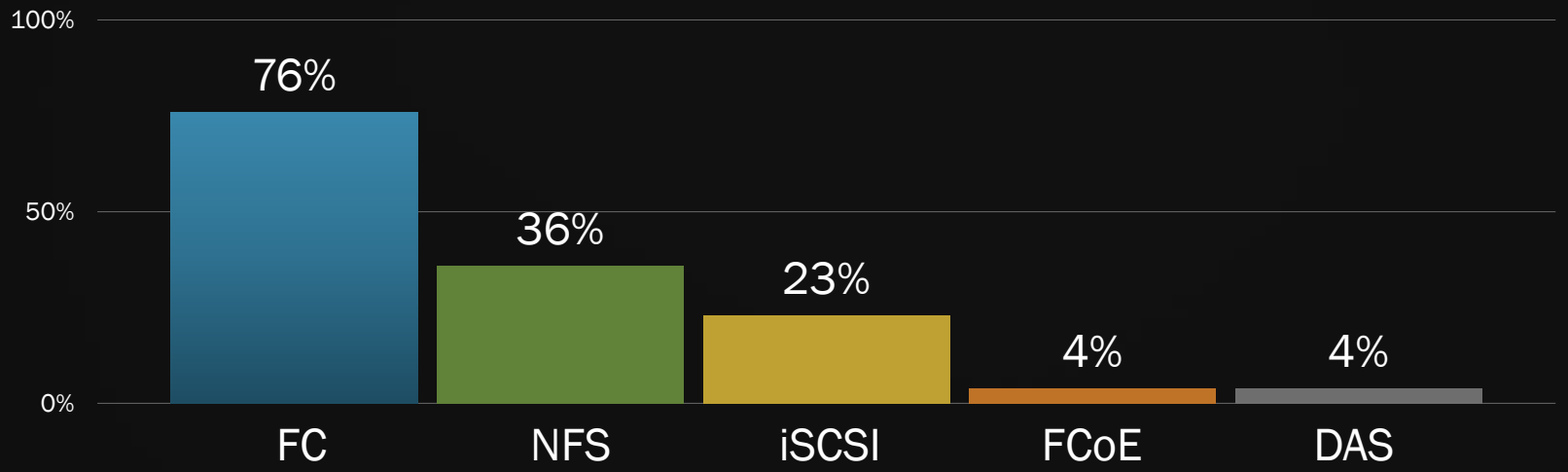
Fibre Channel Reigns for Virtualization

WHICH PROTOCOLS DO YOU USE FOR NETWORKING VIRTUAL SERVER HOSTS TO STORAGE?



Source: Forrester, September 2010

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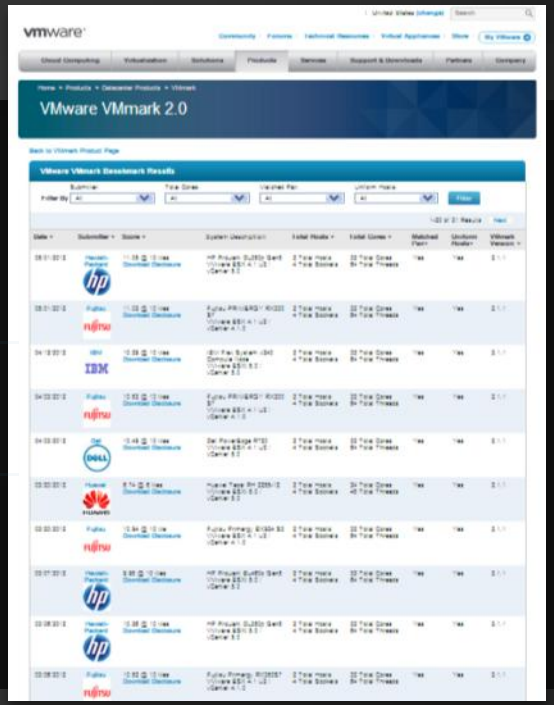
Is FC SAN Relevant for Virtualized Data Centers?

VMware VMmark 2.1.1—www.vmware.com/a/vmmark/

100% # of networked storage configurations in the TOP 20 Benchmarks are using **Fibre Channel**
(16 out of 20, 4 are using Direct-Attach SAS)

0% # of networked storage configurations in the TOP 20 Benchmarks are using **iSCSI**

0% # of networked storage configurations in the TOP 20 Benchmarks are using **NAS**



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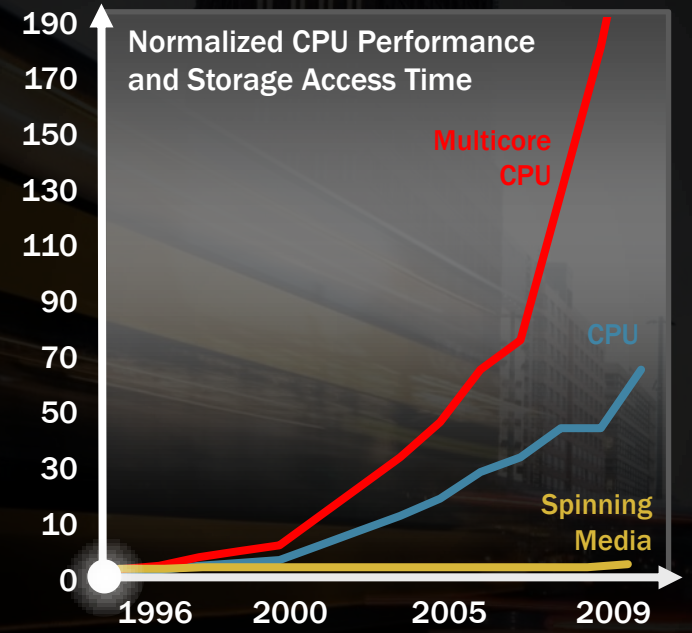
EMERGING TECHNOLOGIES—THE I/O BOTTLENECK

- Dramatically lower access times
- Increased IOPS (100x)
- Greater reliability, lower power and cooling
- 71% CAGR (2010–2014)



175x
CPU PERFORMANCE IMPROVEMENT

1.3x
SPINNING MEDIA PERFORMANCE IMPROVEMENT

Source: Gartner

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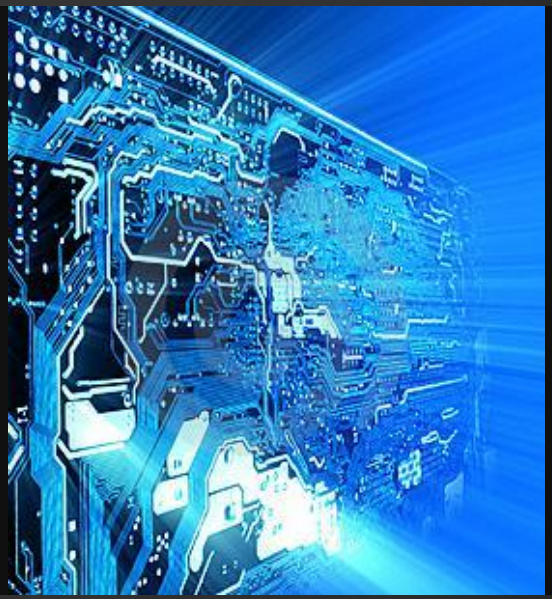
SAN Futures

NEW SAN TECHNOLOGY READY TO EVOLVE WITH THE DATA CENTER

- Unprecedented uptime & reduced operation costs
- Not about protocol—it's storage networking innovation
  - Targeted at storage professionals, developed by storage professionals
  - Technological innovation & IO explosion continue
- Today's platform… stay tuned!



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HP AND BROCADE SAN

The winning bet for today and tomorrow

- Unequaled uptime via proven, industry leading reliability and availability
- Consolidate today and simplify your fabrics to reduce operating expenses
- Enable maximum performance for virtualized applications to drive business value
- Ready for new Data Center technologies and workloads

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Thank You